

### Dad and the Bomb: I

During the war my father was the chief structural engineer in charge of designing a factory to make B-24 bombers for the Air Corps, the Ford Willow Run plant. He was proud of the fact that it was the largest industrial building under one roof in the world. It was for producing bombers the way Ford produced cars, on an assembly line. The assembly line was a mile and a quarter long.

Once my father took me out to Willow Run to see the line in operation. For as far as I could see, the huge metal bodies of planes were hanging from hooks moving along a belt, with workers installing parts as they moved. It was like pictures I'd seen of the carcasses of steers in a Chicago slaughterhouse, or more exactly, like the last stages of an automobile assembly line with car bodies being transported. (A few years later, I worked on the line myself one summer assembling Dodges at Dodge Plant No. Three in Hamtramck, before I was moved to punch presses).

But instead of being one straight line, as it was originally designed, the assembly line was L-shaped. It was straight for three-quarters of a mile, then bent at a right angle for the last

half a mile. The big fuselages hanging from hooks on the line had to be lowered to a large turntable to make the turn, then picked up again for the rest of the assembly. My father explained the reason for that odd arrangement.

He said that when the original design was fitted onto a map of the site, it was noticed that the assembly line jutted into the next county. Ford owned the land in that county but it didn't "own" the county administration, in terms of taxes and administration, the way it did the county where the line started out. So the plant had to be redesigned and the line jogged to keep it all inside the more friendly, or proprietary county.

At the end of the line the planes were lowered to the floor, one after another, rolled out the hangar doors at the end of the factory, filled with gas and flown out to war. It was an exciting sight for a thirteen-year-old. I was proud of my father.

His next job was to design a still larger airplane factory, again the world's largest plant under one roof, the Dodge Chicago plant. (After the war it was leased to an auto maker to make his innovative car, the bat-winged, rear-engine drive Tucker. The project didn't succeed, but there was a film about it a decade ago, Tucker, in which the story hinged on his ability to lease this huge plant. I was very sorry Dad hadn't lived to see a movie in which

his factory was the hero.)

When the war ended Dad was offered the chance to be in charge of the buildup of the plutonium production facilities at Hanford, Washington. The project was being run by DuPont, under contract from the Atomic Energy Commission. As chief engineer on the project Dad moved from the Albert Kahn firm where he'd been since we moved to Detroit to Giffels and Vallet, which became Giffels and Rossetti. Several years after the war, he told me, it was listed as having the largest volume of construction contracts in the world, and the project on which he was chief engineer was the largest construction project in the world at that time.

I grew up hearing these superlatives about the jobs my father was in charge of. My father who was, remember, a little under five foot four. When I was fourteen or so, I was as tall as he was. The week of the accident, he had just come back from inspecting his Philadelphia Inquirer building, which as I remember had upper-storey floors that had to carry the largest and heaviest rotogravure presses in the world. He had just finished the design of Cobo Hall in Detroit, which may, if I remember this right, have had the largest indoor space without interior columns, or the largest spans, or something. It was my father they relied on to design these things so they wouldn't fall down.

A sort of bedtime story when I was growing up was his dramatic account of how the Takoma Bridge, which he didn't work on, did fall down, resonating with the winds till the roadway buckled and twisted like a blanket being flapped and cars on it pitched off the sides. He told me once that the great cathedrals of Europe were built in a time when engineering wasn't yet a science and the designers worked by trial-and-error, so the ones we saw were the ones that hadn't fallen down. None of my father's buildings had ever collapsed.

### Dad and the Bomb: II

My father's first really good salary was working for Dupont and the AEC after the war, about \$12,000. It was the salary I was offered to start with out of Harvard, at RAND, ten years later. Before long I was up to \$16,000, which was the highest my father ever attained. It was more than twice what he'd made before and during the war, but since there were now just the two of us we had moved out of the house in Highland Park into a small apartment near the Arts Center.

While I was away as a sophomore at Harvard, on a full scholarship, my father left his job with Giffels and Rossetti, for reasons I never learned at the time. He was out of work for almost a year. Then he went back to Giffels and Rossetti as Chief Engineer for the whole firm.

Thirty years later, when my father was 89 (he lived to be 96) I happened to ask him why he had left Giffels and Rossetti. He said, "Because they wanted me to help build the H bomb."

This was rather startling statement for me to hear that year. It was 1978, I was in full-time opposition to the nuclear arms race, and specifically to the deployment of the neutron bomb, which

President Carter was proposing to send to Europe. (It was the year I was arrested four times on the railroad tracks at Rocky Flats Nuclear Weapons Production Facility, which produced all the plutonium triggers for H-bombs and was going to produce the cores for neutron bombs). I'd never heard anything like this before from my father, who wasn't particularly wired in to my antinuclear work or any of my activism since the Vietnam war had ended. I asked him what he meant.

"They wanted me to be in charge of designing a big plant that would be producing material for an H-bomb."

I guessed that might have been the Savannah River plant in Georgia. He said he thought so. I asked him when this was.

"Late '49."

I said, "You must have the date wrong. You couldn't have heard about the hydrogen bomb then, it's too early." I'd just been reading about that. The General Advisory Committee of the AEC, Oppenheimer and Conant and Fermi were just considering that fall whether or not to launch a crash program for an H-bomb. They advised against it. "Truman didn't make the decision to go ahead till February, 1950. Meanwhile the whole thing was super-secret. You couldn't have heard about it in '49."

My father said, "Well, somebody had to design the plant if they were going to go ahead. I was the logical person. I was in charge of the whole project at Hanford, the structural engineering. I had a Q clearance."

That was the first I'd ever heard that he'd had a Q clearance, an AEC clearance for nuclear weapons design and stockpile data. I'd had that myself in the Pentagon, after I left RAND in 1964. It made sense that he would have had to have one, for Hanford. I said, "So you're telling me that...you would have been one of the only people in the country who knew we were planning, or considering building the H-bomb in 1949?"

He said, "I suppose so. Anyway, I know it was late '49, because that's when I quit."

"Why did you quit?"

"I didn't want to make an H bomb. Why, that thing was going to be 1000 times more powerful than the A-bomb." I thought, score one for his memory, at 89. He remembered the factor right. Maybe this story was true.

He went on: "I hadn't wanted to work on the A-bomb, either. But then Einstein seemed to think that we needed it, and it made sense to me that we had to have it against the Russians. So I took the job, but I never felt good about it.

"Then when they told me they were going to build a bomb 1000 times bigger, that was it for me. I went back to my office and I said to my deputy, "These guys are crazy. They have an A-bomb, now they want an H-bomb. They're going to go right through the alphabet till they have a Z-bomb."

I said, "Well, they've only gotten up to N so far."

He said, "There was another thing about it that I couldn't stand. Building these things generated a lot of radioactive waste. I wasn't responsible for designing the containers for the waste, but I knew they were bound to leak eventually. That stuff was deadly forever. It was radioactive for 24,000 years."

Again he had turned up a good figure. I said, "Your memory is working pretty well. That's the half-life of plutonium."

There were tears in his eyes. He said huskily, "I couldn't stand the thought that I was working on a project that was poisoning parts of my own country forever, that might make parts of it

uninhabitable for thousands of years."<sup>1</sup>

I thought over what he'd said, then I asked him if anyone else working with him had had misgivings. He didn't know.

"Were you the only one who quit?" He said yes. He was leaving the best job he'd ever had, and he didn't have any other to turn to. He lived on savings for a while, and he investigated a job selling a new kind of forms for prestressed concrete that someone had invented. My uncle Lou, mother's brother, was considering backing him in that. I thought about Oppenheimer and Conant and Fermi and Rabi, who had had extreme reservations about the H-bomb those same months and even expressed them strongly, inside the system, before Truman's decision. But they never quit anything.

I asked him what had made him feel so strongly, to act a way that nobody else did. He said, "You did."

That didn't make any sense. I said, "What do you mean? We didn't discuss this at all. I didn't know anything about it."

Dad said, "It was earlier. I remember you came home with a book one day, and you were crying. It was about Hiroshima. You said, 'Dad, you've got to read this. It's the worst thing I've ever read.'"

I said that must have been John Hersey's book, Hiroshima. I hadn't read it in the New Yorker, I read it when it came out in a book. I didn't remember giving it to him.

"Yes. Well, I read it, and you were right. That's when I started to feel bad about working about an atomic bomb project. And then when they said they wanted me to work on a hydrogen bomb, it was too much for me. I thought it was time for me to get out."

I asked if he had told his bosses why he was quitting. He said he had told some people, others not. The ones he told seemed to understand his feelings. In fact, in less than a year, the head of the firm called him to say that they wanted him to come back as chief structural engineer for the whole firm. They were dropping the Dupont contract, they didn't say why, so he wouldn't have to have anything to do with the AEC or bomb-making. He stayed with them till he retired, then he continued to consult for the next ten years or so.

I said, finally, "Dad, how could I not ever have heard any of this before? How come you never said anything about it?"

My father said, "Oh, I couldn't tell any of this to my family. You weren't cleared."

## END NOTES

1. But he had been part of such a project. When I read stories, once or twice a year, about leakage at Hanford and the danger to the water-table and the Columbia River, I always think: I'm glad Dad isn't reading this.